

WHAT IS CLAIMED IS:

1. A method of handling a structure, the method comprising the steps of:

5 setting a beam outside a building inside of which a reactor pressure vessel is installed, said beam passing above said reactor pressure vessel and crossing over said building;

 setting a lifting machine having a lifting device for
10 lifting an object to be lifted onto said beam, said lifting machine being moved on said beam;

 carrying in a shield for shielding radioactive rays radiated from said reactor pressure vessel into said building through an opening portion provided in a roof of
15 said building;

 carrying out said reactor pressure vessel inside said building together with said shield upward through said opening portion using said lifting device;

 moving said lifting machine holding said reactor
20 pressure vessel on said beam until a position where said building does not exist below said reactor pressure vessel;
and

 performing any one of lifting down said reactor pressure vessel using said lifting device to mount said
25 reactor pressure vessel onto a transporting machine and lifting down said reactor pressure vessel into a storage building using said lifting device.

2. A method of handling a structure, the method comprising the steps of:

lifting up a reactor pressure vessel installed inside a building at a position outside said building up to a
5 level above said building using a lifting device of a lifting machine which has the lifting device and moves on a beam, said beam crossing over said building inside of which said reactor pressure vessel is installed;

moving said lifting machine on said beam, and moving
10 said reactor pressure vessel until said reactor pressure vessel is positioned above an opening portion provided in a roof of said building; and

lifting down said reactor pressure vessel to an installation position of said reactor pressure vessel in
15 said building using said lifting device.

3. A method of handling a structure according to any one of claims 1 and 2, wherein said lifting device is a jack type lifting device.

20

4. A method of handling a structure according to any one of claims 1 to 3, wherein when said lifting machine is moved above said building, said lifting device is moved through an area other than an area just above a fuel
25 storage pool provided inside said building.

5. A method of handling a structure according to any one of claims 1 and 2, wherein said reactor pressure vessel lifted by said lifting device is moved inside a guide device for guiding said reactor pressure vessel, said guide
5 device being arranged inside said building.

6. A method of handling a structure according to claim 5, wherein said guide device is set before vertically moving said reactor pressure vessel inside said building.

10

7. A method of handling a structure according to claim 6, wherein said guide device is set inside said building at least on any position of an inside of a reactor well, an operating floor around the reactor well and a reactor
15 shield surrounding said reactor pressure vessel.

8. A method of handling a structure according to any one of claims 5 to 7, wherein a buffer member for moderating an impact against a structure moved inside said guide device
20 is arranged inside said guide device.

9. A method of handling a structure according to claim 6, wherein a protective wall is of an expandable telescopic structure.

25

10. A method of handling a structure according to claim 3, wherein when said beam is set, the method further comprises

the steps of:

erecting a column, setting a jack type hoisting device hoisting using said column to said column, and lifting said beam at a level higher than said building
5 using said jack type hoisting device; and

connecting said beam to another column by passing said beam above said building.

11. A method of handling a structure according to claim
10 10, wherein when said beam is set, a plurality of beams are set by connecting the beams using at least bolts and pads.

12. A method of handling a structure according to claim 3,
wherein said jack type lifting machine is set on said beam
15 using said jack type hoisting device.

13. A method of handling a structure according to any one of claim 1 and claim 2, wherein before setting said opening portion, said beam is connected with the roof of said
20 building remaining said building after opening said opening portion.

14. An equipment of handling a structure comprising:
a plurality of columns arranged around a reactor
25 building, said reactor building containing a reactor pressure vessel, and having an opening portion above said reactor pressure vessel;

a beam crossing above said reactor building, both ends of said beam being connected to said columns; and

a lifting machine having a lifting device, said lifting machine being movable on said beam.

5

15. An equipment of handling a structure according to claim 14, wherein a distance between a lowermost plane of said lifting device and an upper plane of said reactor building is longer than a height of said reactor pressure vessel.

10

16. An equipment of handling a structure according to any one of claim 14 and claim 15, which comprises a transporting machine movable along said column from the grand level up to at least the height of said reactor building.

15

17. An equipment of handling a structure according to any one of claim 14 to claim 16, wherein said beam is connected to said building at a position near said opening portion.

20

18. An equipment of handling a structure according to any one of claim 14 to claim 17, wherein total number of said columns is larger than 6 and smaller than 16.

25

19. An equipment of handling a structure according to any one of claim 14 to claim 18, wherein said lifting machine

comprises a traveling device having a motive power for running on said beam.

20. An equipment of handling a structure according to any
5 one of claim 14 to claim 19, wherein said lifting machine comprises a fixing mechanism for fixing said lifting machine onto said beam.

21. A method of handling a structure according to claim 1,
10 the method further comprising the steps of:

lifting up said reactor pressure vessel together with said shield using said lifting device to the outside above said building; and

then closing a door of said lifting machine for
15 shutting a space through which said reactor pressure vessel has passed, said door of said lifting machine existing between said reactor pressure vessel and said building in a vertical direction.

20 22. A method of handling a structure according to claim 2, the method further comprising the steps of:

lifting up said reactor pressure vessel using said lifting device up to a level where a lowermost portion of said reactor pressure vessel becomes higher than the roof
25 of said the outside above said building;

then closing a door of said lifting machine for shutting at least a part of a portion of projecting said

reactor pressure vessel in a vertical downward direction,
said door of said lifting machine being arranged in said
lifting machine in a level higher than the roof of said
building in the vertical direction and in a level lower
5 than the lowermost position of said reactor pressure
vessel;

moving said lifting machine until a new reactor
pressure vessel comes to above said opening portion, and
opening said door of said lifting machine; and

10 setting said new reactor pressure vessel to the
position where said reactor pressure vessel has been
installed.

23. An equipment of handling a structure according to any
15 one of claims 14 to 20, which comprises a storage building
for said reactor pressure vessel in a position under one
beam among said beams, said lifting machine being moved on
said one beam, said position being positioned under said
beam within a moving range of said lifting machine.

20

24. A method of handling a structure, the method
comprising the steps of:

setting a beam outside a building inside of which a
reactor pressure vessel is installed, said beam passing
25 above said reactor pressure vessel and crossing over said
building;

setting a lifting machine having a lifting device for

lifting said reactor pressure vessel onto said beam, said lifting machine being moved on said beam;

carrying in a shield for shielding radioactive rays radiated from said reactor pressure vessel into said building through an opening portion provided in a roof of said building;

carrying out said reactor pressure vessel together with said shield upward from said building using said lifting device;

moving said lifting machine on said beam until a position where said building does not exist below said reactor pressure vessel;

then lowering said lifting machine hanging said reactor pressure vessel down to the ground using a jack type hoisting device arranged adjacent to said building;

moving said lifting device on a transporting rail installed in the ground until a bottom portion of said reactor pressure vessel comes to a storage building for said reactor pressure vessel; and

lifting down said reactor pressure vessel into said storage building using said lifting device provided in said lifting machine.

25. A method of handling a structure according to any one of claim 1, claim 2 and claim 24, wherein said reactor pressure vessel is a reactor pressure vessel for a nuclear power plant.

26. A method of handling a structure according to any one of claim 1 and claim 24, wherein when the step of setting said beam outside said building so as to pass above said reactor pressure vessel and to cross over said building is let be a first process; and the step of setting said lifting machine having said lifting device on said lifting machine and moving on said beam be a second process; and the step of carrying in said shield into said building through the opening portion provided in the roof of said building be a third process,

said first process and said second process are performed during operating the reactor before starting a first scheduled inspection period for performing said third process or during a second scheduled inspection period performed before performing said first scheduled inspection period.

27. A method of handling a structure according to any one of claim 1 to claim 3 and claim 24, wherein when said reactor pressure vessel is carried out from said building, said lifting machine is moved above said building in a direction departing from a fuel storage pool.

28. A method of handling a structure according to any one of claim 3, claim 10 to claim 12 and claim 24, wherein said jack type hoisting device is arranged in the side of a wall

provided a larg article carrying-in port outside said reactor building.